Before the

Federal Communications Commission

Washington, DC 20554

In the Matter of Revision of Parts 2 and 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz band	ET Docket No. 03-122 RM - 10371

COMMENTS OF NOKIA INC.

Nokia Inc. ("Nokia") hereby submits these comments in response to the Notice of Proposed Rulemaking ("NPRM") in the above-mentioned proceeding.[1] Nokia is the world leader in mobile communications. The company is the leading supplier of mobile phones and a leading supplier of mobile, fixed broadband and IP networks, including 802.11 Radio Local Area Networks (RLAN) equipment that can be used in the 5GHz frequency band. Nokia is a broadly held company with listings on six stock exchanges.

Nokia applauds the Commission for moving forward quickly with this proposed rulemaking. This NPRM is particularly timely in light of the growing demand for wireless broadband services and international activities to make spectrum available for RLANs in the 5GHz frequency band.

Nokia supports the Commission's proposal to amend Part 15 of its rules governing the operation of unlicensed National Information Infrastructure ("U-NII") devices such as RLANs to provide an additional 255 MHz of spectrum in the 5.47-5.725 GHz band. Nokia is a member of the Wireless Ethernet Compatibility Alliance ("WiFi Alliance"), which submitted a Petition for Rulemaking on January 15, 2002 seeking an NPRM to amend Part 15 of the Commission's rules to make 5.47-5.725 GHz available for U-NII devices such as RLANs. Nokia additionally filed an *ex-parte* letter in support of the WiFi Alliance Petition on February 28, 2002. As noted in the NPRM, the overwhelming majority of the

[1] FCC 03-110 (released June 4, 2003).

commenters in response to the WiFi Alliance Petition supported the WiFi Alliance's proposal to increase the amount of spectrum available for U-NII equipment.[2]

Nokia concurs with the Commission's conclusion "that an additional 255 megahertz should be made available under the U-NII rules to meet the growing demand for new high data rates and services and to enable equipment to use spectrum that is harmonized with the European HiperLAN standards"[3] and that making available this spectrum "will foster the development of a wide range of new and innovative unlicensed devices and lead to increased wireless broadband access and investment." This is consistent with the recommendations of the Spectrum Policy Task Force Report to "expand the use of both exclusive rights and commons models, and move away from the command-and-control model"[4]. Nokia agrees that more spectrum is needed to support increasing demand for both unlicensed and licensed commercial wireless services.

Nokia supports the Commission's proposal to make available spectrum that is globally harmonized. At the recently concluded World Radiocommunications Conference-2003 ("WRC-03"), the conference took a decision to extend a global mobile allocation for RLANs to 5.150-5.350 GHz and 5.470-5.725 GHz.[5] The United States was a principle player in reaching this accord and the Commission's proposal will ensure that the United States is able to take advantage of the benefits of globally harmonized spectrum. Equipment that is manufactured for global instead of regional markets can take advantage of economies of scale and is less costly to manufacture and produce, lowering costs for end-users and facilitating the expansion of these wireless services to a broader range of users.

Nokia supports the Commission's conclusion that interference mitigation techniques such as dynamic frequency selection (DFS) and transmit power control (TPC) are sufficient in the proposed U-NII band at

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[2] *NPRM*, at ¶5.

[3] *NPRM*, at ¶12.

[4] *Spectrum Policy Task Force Report,* ET Docket No. 02-135*,* November 2002, p.65.

[5] *See* WRC-03 Resolution COM 5/16 and the corresponding changes to the International Telecommunications Union ("ITU") Table of Frequency Allocations.

5.47-5.725 GHz to provide adequate protection to incumbent users, including Government radar systems, and ensure successful sharing of this band.

With respect to systems where multiple devices operate under a central controller, Nokia supports the Commission's proposal that only the central controller be required to have DFS. The Commission seeks comment on whether to require DFS for remote devices not under the control of a master device such as devices that are part of ad-hoc mesh networks. We believe that, particularly where these devices operate at low-power levels, they do not pose any risk of harmful interference for incumbent systems. For this reason, the Commission should consider allowing ad-hoc network devices operating at low-power levels to be exempted from the DFS requirement.

With respect to TPC, Nokia supports the Commission's proposal to require a TPC mechanism in the 5.47-5.725 GHz band to protect incumbent services. The Commission seeks comment on whether U-NII devices should be required to employ TPC if their maximum power is 3dB or more below the maximum permitted under the rules. We believe that this power control mechanism should not be a requirement for these devices as operation at least 3dB below the maximum permitted power limit is sufficient to mitigate interference. This was recognized at WRC-03 which concluded in Resolves 7 of WRC-03 Resolution COM 5/16 that TPC shall be employed "to provide, on average, a mitigation factor or at least 3 dB on the maximum average output power of the systems, or if [TPC] is not in use, then the maximum mean e.i.r.p. shall be reduced by 3 dB".

The Commission also proposes to require U-NII devices to employ a TPC mechanism that ensures a 6dB drop in power when triggered. We do not believe that there is any benefit to requiring a triggering mechanism or other specific implementation techniques. To do so would be unnecessarily restrictive and inhibit innovative design. Provided that devices employ a TPC mechanism that ensures operation of 3dB or more below the maximum permitted power limit, the Commission should allow manufacturers to determine the appropriate implementation technique for TPC.

The Commission seeks comment on what appropriate test procedures are required to ensure that devices comply with the DFS and TPC requirements proposed in this NPRM. Nokia recommends that the Commission consider the test procedures already required in Europe to ensure that equipment meets with existing DFS and TPC requirements. The Commission can draw on the many years of experience on the part of regulators and manufacturers who have conducted ETSI-developed conformance tests to ensure that devices meet the kind of requirements proposed in this NPRM.

In summary, Nokia applauds the Commission's timely introduction of this proceeding. We strongly support the Commission's proposal to allocate an additional 255 MHz of globally harmonized spectrum for unlicensed devices such as RLANs in the 5.470-5.725 GHz frequency band. This additional unlicensed spectrum is necessary to meet projected increased demand for these types of wireless broadband services. We believe that the majority of the Commission's proposals with respect to DFS and TPC interference mitigation mechanisms provide the appropriate balance between protecting incumbent users and allowing innovative unlicensed services to flourish.